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ABSTRACT

This manual, the third in a series of publications growing out of a pilot project in Extension Transportation Education undertaken at the University of Missouri under contract with the Federal Extension Service, has been prepared primarily for Extension personnel assigned to develop a state level educational program in transportation. It provides broad program guidelines as a reference or starting point for the transportation specialist. It will also be helpful to the Extension economist or marketing specialist who may be called upon to deal with transportation and physical handling problems encountered in a commodity marketing or firm management assignment. It is meant to acquaint the reader with the clientele and industry groups with which he will be working, to outline some of the key points in the process of demonstration firm analysis in this field, and to suggest some appropriate educational methods and procedures for Extension work in transportation. (DM)

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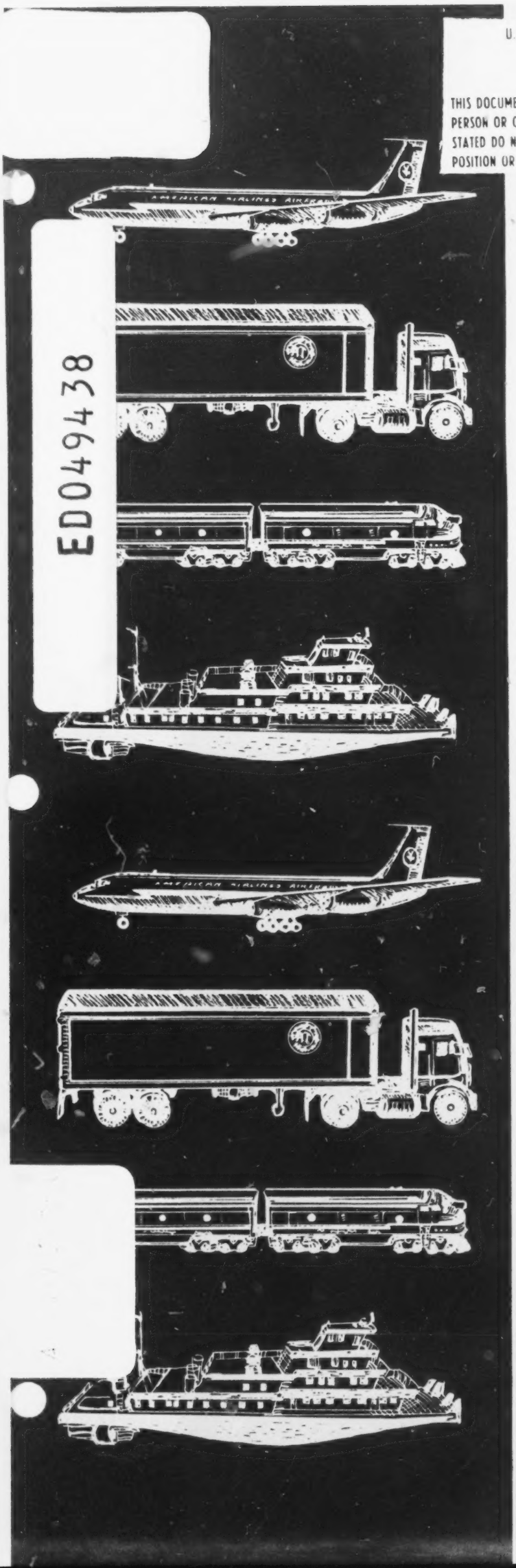

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Guidelines for an

EXTENSION EDUCATIONAL PROGRAM

in

TRANSPORTATION

Moser and Kriebel

Transportation in Agriculture and
Business Series – No. 3

Manual 71 ● 1969
EXTENSION DIVISION
UNIVERSITY OF MISSOURI
COLUMBIA

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Transportation in Agriculture and Business: Description, Problems, Research, Education, Extension Manual 63, 1964.

Refrigerated Transportation by Motor Common Carriers—A Management Inquiry, Extension Manual 70, 1969.

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FOREWORD

This publication has been prepared primarily for Extension personnel assigned to develop a state-level educational program in transportation. It provides broad program guidelines as a reference or starting point for the transportation specialist. It will also be helpful to the Extension economist or marketing specialist who may be called upon to deal with transportation and physical handling problems encountered in a commodity marketing or firm management assignment.

Our purpose is to create a better awareness and understanding of the major facets and educational needs of this important industry which should be recognized in building an effective Extension program. The material is not intended to be all-inclusive, nor is it presented as *the* way to initiate and develop a program. It is meant to acquaint the reader with the clientele and industry groups with which he will be working, to outline some of the key points in the process of demonstration firm analysis in this field, and to suggest some appropriate educational methods and procedures for Extension work in transportation.

This manual is the third in a series of publications growing out of a national pilot project in Extension transportation education undertaken at the University of Missouri under contract with the Federal Extension Service. For additional background information useful to the Extension specialist working in the field of transportation, the reader may wish to refer also to the two earlier publications in this series, by the same authors: *Transportation in Agriculture and Business: Description, Problems, Research Education*, Extension Manual 63. (University of Missouri-Columbia, 1964); and *Refrigerated Transportation by Motor Common Carriers—A Management Inquiry*. Extension Manual 70 (University of Missouri-Columbia, 1969).

There is increasing recognition of the need for educational work in this field and a growing cooperative effort at both the regional and state levels toward development of active Extension programs in transportation and physical distribution. Much of the credit for this should go to the Marketing and Utilization Sciences Division of the Federal Extension Service, and to the adminstrators of the Department of Agricultural Economics and the Extension Division of the University of Missouri. They saw the need and the opportunity for a thoroughgoing study of the special educational requirements in agricultural transportation and teamed together to supply leadership and funding for such an undertaking.

Special recognition should go to Ray Scott, who was Director of the Marketing and Utilization Sciences Division, Federal Extension Service, at the inception of the project and one of its prime movers; to Paul Mohn, economist—marketing firm management, Federal Extension Service, who took leadership in the project as the first contract officer's representative; to Sharon Hoobler, who has given strong administrative support to the project since taking over as director, Marketing and Utilization Sciences Division, Federal Extension Service; and to Dean Vaughan, former assistant director of the Marketing and Utilization Sciences Division, Federal Extension Service, who was assigned FES responsibility for the transportation area midway in the contract term and has made invaluable contributions both to the project and to the follow-up work of program development with the regional Extension marketing committees and state Extension personnel.

At the University of Missouri special appreciation is expressed for the contributions of Brice Ratchford, vice president for Extension; Elmer Kiehl, dean of the College of Agriculture; Schell Bodenhamer, associate dean for Extension, College of Agriculture; Wendell McKinsey, former chairman, and V. James Rhodes, present chairman of the Department of Agricultural Economics; and Clarence Klingner, assistant chairman for Extension, Department of Agricultural Economics. All of these men have given outstanding administrative support to this pioneering undertaking in Extension transportation education, and through their interest, efforts, and leadership have contributed greatly to the project results.

Of course, the authors must assume responsibility for any deficiencies in their handling of the project or in the publications which have developed out of the study.

David E. Moser
Wesley R. Kriebel

Guidelines for an Extension Educational Program in TRANSPORTATION

PART 1

Why a Transportation Program ?

The Need for Help

Farmers, processors, marketing firms and many thousands of transportation and physical distribution workers are dependent upon the smoothly efficient functioning of our transportation system. The mass merchandising system which has evolved in recent years with the rise of the supermarket and the grocery retail chain has accentuated the role of transportation in today's agricultural market structure. The transportation bill for food has been increasing annually and is estimated by the U. S. Department of Agriculture at more than five billion dollars per year.

The carriers do more than simply move a commodity from one place to another. Depending upon its nature, the commodity shipped may require any of a number of services which are offered along with hauling. The processed products of agriculture are being shipped over longer distances; interregional competition has increased correspondingly. Often, only the cost of transportation stands between the farmer's local market and distant low-cost producing areas. As the mass merchandising system interposes its demand for quality, uniformity, volume, continuous supply and low unit cost, the individual agricultural producer or marketer will find himself even more involved in problems of physical distribution and transportation.

Management personnel of shippers and carriers are faced with increasingly complex problems of planning, organizing, scheduling, coordinating, directing, and controlling the physical distribution functions. In recognition of these problems, managers are re-evaluating plant and distribution center locations and transportation and handling methods

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Quotable Quotes

"Tomorrow's transportation will demand not only experience, but also a maximum of education and specialized training, and even now the number of people studying transportation is not large enough to meet transportation industry need."

Mrs. Virginia Mae Brown
Chairman, Interstate Commerce Commission

in terms of their ability to satisfy customer service requirements at optimum cost levels.

The need for educational emphasis in the field of transportation, particularly in Extension programs for middle management and staff personnel, is further emphasized by the dramatic technological changes which are taking place in transportation equipment and facilities. The new communications, data processing, and management analysis and control tools and methods, the changes in the structure of competition in the transportation industry, and the evolution of the logistic systems concept also argue for increased educational emphasis. Persons presently employed at managerial and supervisory levels need assistance in keeping abreast of new concepts, new technology, and new methods for analyzing, directing and controlling the traffic and transportation of the firm.

The Cooperative Extension Service, with its field organizations and continuing contacts at the local, state, and federal levels, and its long experience in dealing with similar educational problems, is in a unique position to supply leadership in serving the educational needs of this important transportation and physical distribution clientele.

Transportation Program Objective

An Extension program in transportation should have as its broad objective the improvement of efficiency and service in the transportation and physical distribution of goods, through educational assistance to shippers, receivers, and carriers and their personnel.

This publication is designed to offer some guidelines for such a program in terms of needed personnel resources and competencies; clientele and industry contacts; collection, storage and retrieval of needed descriptive data and background information; procedures for identifying and evaluating problems requiring priority effort; and a discussion of the demonstration firm method as one approach to Extension educational work on firm-oriented problems in this field.

The urgent need for improved effectiveness and management development in this field can best be served by the designation of a transportation specialist to plan, execute and coordinate a continuing program of transportation Extension education.

Transportation Specialist's Role

The transportation specialist will work closely with commodity marketing specialists and other Extension personnel on problems in their fields of responsibility involving transportation, material handling, warehousing and other aspects of physical distribution management. He will also draw upon special competencies in economics, sales, business management, labor relations, financial management, communications and information management, statistical programming, industrial engineering and law, as needed.

Transportation and handling problems of more limited scope related to a specific commodity field are frequently handled by the commodity marketing specialists as part of their regular assignments. While such activities are worthwhile, it may be difficult to carry on a well-balanced, sustained program of transportation education with such a fragmented approach. Many of the most promising opportunities for savings will be by-passed in the absence of a coordinated program involving key elements of the trans-

"In the field of physical distribution management the rate of obsolescence of human knowledge among those who have completed formal training is so high as to be alarming. In no area of business has change been more rapid nor its effects more pervasive."

Martin R. Warshaw
Associate Professor of Marketing
University of Michigan

portation industry and making use of a range of educational resources and competencies.

In those states lacking the resources to appoint a full-time transportation specialist, a marketing specialist with other duties (e.g., a food distribution or grain marketing specialist) may be designated and trained to undertake the transportation work, with specific responsibility and time allocation for this assignment. In order to get an effective program under way it is recommended that at least one-half of the specialist's time be made available for this transportation work.

Competencies Required

Different points of view exist regarding the most desirable combination of qualifications or competencies to do effective Extension transportation work. Individual competencies will differ and the short-run direction of program emphasis will tend toward exploiting these competencies. In time, as experience and additional skills are acquired, the specialist may profitably venture into other problem areas to round out the program in accordance with the stated objectives.

The specialist should be familiar with the structure and functions of the transportation industry, but this does not mean that he needs to be an expert in operations, maintenance, rates, sales, personnel administration and other phases of transportation management. Since transportation transcends political boundaries, he should be familiar with regional, national, and international patterns of distribution for at least those commodities which are important to the economy of his state. He must be alert to the changes taking place in physical distribution and the forces that underlie them.

Problems of regulation and transportation legislation may at times deserve attention by the transportation specialist. He will want to keep up-to-date on these and other current issues so he can point out the alternatives and likely consequences of proposed policies.

It is sometimes assumed that a transportation specialist will function as a rate expert. This should *not* be his primary role. The rate structure and the rate-making process are an important aspect of transportation and should not be over-looked. The transportation specialist should have a thorough understanding of the process of ratemaking[1] and the importance of transportation rates to the economics of agricultural marketing. However, ratemaking and classification negotiations are a highly technical specialty and should be left to the transportation consultants and the appropriate regulatory and service agencies. Unless circumstances dictate to the contrary, the transportation specialist will do well not to become heavily involved in rate service work. He can usually contribute more productively to Extension educational objectives by working in other areas of management development.

[1] See Appendix for a brief outline of ratemaking procedures.

PART 2

Gearing Up for the Job

"It is high time that both transportation companies and transportation specialists within companies should realize more fully the important role of transportation management."
Harold Koontz
Professor of Management
University of California at Los Angeles

Clientele and Industry Contacts

Transportation is a challenging field in which to work. There are several different clientele groups with divergent and often conflicting points of view. The transportation specialist must become thoroughly acquainted with the leadership in the individual groups to understand their problems and to maintain an attitude of objectivity in dealing with all of them.

The transportation specialist's clientele will include the transportation and marketing firms of the state, and especially those handling agricultural products. However, the specialist may work with any or all of the public agencies and other groups concerned with transportation rates.

Because of the special importance of the research and educational services of the U. S. Department of Agriculture to agricultural transportation, the following description is given covering the more important U.S.D.A. agencies active in this field:

Marketing and Utilization Sciences Division, Federal Extension Service, U. S. Department of Agriculture is concerned with the development, coordination, and evaluation of an active Extension program in transportation and physical distribution at both the regional and state levels. Timely research information is assembled, analyzed, and disseminated to state Extension specialists, and active contact and liaison is maintained between transportation research personnel and Extension specialists to optimize effectiveness of educational efforts in transportation and physical distribution.

Transportation Branch, Transportation and Facilities Research Division, Agricultural Research Service, U. S. Department of Agriculture is concerned with the structure, equipment, containers, devices, work methods, and operating methods used in marketing and transporting food and fiber products from the farms to consumers. The research seeks to find ways to improve these physical elements and handling methods in order to improve their efficiency, increase labor productivity, and help hold down marketing costs.

Transportation Economics Group, Marketing Economics Division, Economics Research Service, U. S. Department of Agriculture is concerned with learning where farm products and supplies move, how they move, why they move as they do, and how they could be moved better for less money. Because of gaps in information, transportation research involves the collection of basic data as well as the analysis of these data. The research also includes ways to measure the revenue requirements of carriers, and the appraisal of current transportation laws as they affect agriculture.

Management Services Division, Farmer Cooperative Service, U. S. Department of Agriculture is concerned with transportation costs and demands for transportation services on the products sold by farmer cooperatives and the farm supplies acquired and handled by cooperatives for their members. Research and management services are designed to develop methods for reducing losses in transit, explore alternate methods of handling and transportation, improve utilization and efficiency of traffic management services, and determine costs, scope of operation and economic importance of privately operated motor trucks.

TRANSPORTATION CLIENTELE AND INDUSTRY AND PUBLIC AGENCY CONTACTS*

Primary Clientele:

- Farmer Cooperatives
- Shipper firms using for-hire transportation
- Shipper firms operating private motor fleets or other transportation facilities
- Railroads
- Motor Common Carriers
- Motor Contract Carriers
- Exempt Commodity Haulers
- Barge Lines
- Airlines
- Public and Private Warehouses
- Local Cartage Companies

Industry Contacts:

- Equipment Leasing Companies
- Transportation Equipment Manufacturers
- Material Handling Equipment Manufacturers
- Shipper-Carrier Advisory Councils
- Carrier Rate Bureaus
- Banks and Credit Agencies
- Transportation and Traffic Clubs and Associations
- Trade Associations
- Local and State Chambers of Commerce
- Private Consultants and Management Services
- Labor Unions
- Trade Periodicals and Publishers

Public Agencies:

Federal Non-Regulatory Agencies:
- U.S. Department of Agriculture
  - Federal Extension Service
  - Transportation and Facilities Research Division, ARS
  - Economic Research Service
  - Farmer Cooperative Service
  - Transportation and Warehouse Division, C&MS
- U.S. Department of Commerce
  - Bureau of the Census
  - Maritime Administration
- U.S. Department of Transportation
- Small Business Administration
- Corps of Engineers, U.S. Army

Federal Regulatory Agencies:
- Interstate Commerce Commission
- Civil Aeronautics Board
- Federal Maritime Commission

State Public Service or Public Utility Commission

State Industrial Development Commission

Industrial Development Districts and Councils

*For a more complete listing of transportation agencies and associations and other information sources, with names and addresses, see Moser and Kriebel, Transportation in Agriculture and Business, Manual 63, Extension Division, University of Missouri, Columbia, Missouri, 1964; pp. 62-64.

Transportation Services Branch, Transportation and Warehouse Division, Consumer and Marketing Service, U. S. Department of Agriculture has the statutory responsibility to assist in obtaining fair and reasonable rates and services essential to efficient transportation of agricultural commodities and farm supplies. Acting for the Secretary of Agriculture, the Consumer and Marketing Service is the direct representative in negotiations with carriers and in proceedings before Federal and State transportation regulatory bodies.

In developing a program in transportation it is important not to try to be "all things to all people." It will be necessary to set up priorities and deal first with those problems and opportunities which are most important and most suitable to the application of Extension methods, and which fit in neatly with the specialist's particular competencies.

The specialist should identify himself with groups which will put him in active contact with key traffic and transportation people. Continuing contact with and participation in the programs of the active groups in transportation will help to establish a solid base for future Extension activities. Membership in transportation associations will offer an opportunity to influence them in the direction of a constructive policy toward encouragement and sponsorship of transportation education.

Use of an Advisory Committee

The suport of an active advisory group can help to keep the transportation Extension work focused upon the real needs of the clientele and thus increase program effectiveness.

Activities of an advisory group can be useful in three broad areas:

1. To identify and help evaluate significant problems of the industry.
2. To help establish priorities for dealing with these problems, and to advise on proposed methods for handling them.
3. To obtain support and cooperation for the program from industry sources and public agencies.

The advisory group might well include:

1. Management personnel representing the various segments of the for-hire transportation industry and the major shipper interests of the state, including firms operating private fleets.
2. Faculty representative(s) from resident programs in one or more of the following—

transportation and physical distribution management;
industrial engineering; agricultural economics; industrial management; marketing; agricultural engineering.

3. Trade and industry association representatives.

Establishing a continuing relationship with a cross-section of leaders concerned with physical distribution functions and problems will help to achieve a well-rounded program covering the primary educational needs. This will also help avoid the possibility of duplication in activities which might occur without adequate program coordinaton. Such contacts will help to assure that firms seeking assistance will know that it is available through the Extension organization. The establishment of effective working relationships within the transportation field will facilitate the pooling of technical abilities and experiences for maximum total impact of the educational program.

Effective use of industry contacts will be facilitated by an orderly system for filing and maintaining contact information. A contact card and filing system which has worked well for the authors is described under the heading *Information Storage and Retrieval.*

Information Sources

An important limiting factor in the effectiveness of the Extension transportation program will be the kinds and quality of information available. The specialist's name should be entered on mailing lists of government agencies, industry associations, land grant college experiment stations, university bureaus of business research, commodity marketing and trade associations, and other probable sources of transportation and physical distribution information.

Careful consideration should be given to the kinds of material to be assembled and the organization and indexing of these materials to make them readily available and accessible as needed. The following section on Information Storage and Retrieval offers some suggestions concerning the organization of subject matter files and bibliographical notes.

The specialist should subscribe to a carefully selected list of trade publications dealing with the various phases of physical distribution management to keep up with the fast-moving developments in this field. Among the more useful periodical publications for the Extension transportation specialist

"America's colleges are faced with a terrific challenge and responsibility in providing adequate traffic and transportation education and training for the problems of tomorrow."
Gardner J. Wilkes
Assistant Vice-President—Traffic
Missouri Pacific Railroad.

are: *Current Literature in Traffic and Transportation, Traffic World, Transportation and Distribution Management, Distribution Manager* (formerly Distribution Age), *Handling and Shipping, Traffic Management, Commercial Car Journal, Fleet Owner, Transport Topics, Air Cargo,* and *Modern Railroads.*[2]

Information Storage and Retrieval

Contact Information at Your Fingertips

As a transportation specialist you will find it to your advantage to maintain an accurate, up-to-date file of contact information. This file should be organized in a fashion which will enable you to retrieve a given item quickly and unerringly, whether your point of reference is the name of an individual or firm, the geographic location of the contact, or a relationship to a given subject classification, such as Transportation—Carriers, or Wholesaling, Food.

The authors have had good results with a contact card system which involves a three-way classification of each item in the file. This method requires additional time and effort on the part of the secretary when the contact is first recorded; however, it has great advantage over the usual single alphabetical file in the many instances where the purpose in referring to the file is tied to the geographic location or the professional, vocational, or subject matter relationship of the contact, or where the user of the file for some reason does not have in mind the name of the sought-after contact.

[2] A more complete list, with addresses, will be found in Moser and Kriebel, *Transportation in Agriculture and Business*, pp. 63 and 64.

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Subject _____

Name _____

Title _____ Bus. Tel. _____

Bus. Address _____

_____

_____

Home Address _____ Tel. _____

Remarks:

Date of

Contact Through _____ Orig. Contact _____

Contact Card

The contact card form may be arranged as shown above, for printing on a 4 x 6 card.

At the time the contact is first recorded, three copies of the contact card are typed. The cards may be keyed in the upper right hand corner by individual symbols, or they may be printed in three different colors. We use an asterisk for the location file, an "x" for the subject file, and a card with no symbol for the alphabetic file.

1. In the master file the cards are filed alphabetically by name of the contact firm or individual. Where it is thought the most frequent reference will be by firm name, or where a record is to be made of several individuals in the firm, it will be best to insert the firm name in the *Name* space, listing the names and titles of executives of the firm under *Remarks*. When information is updated it has been found helpful to indicate in parentheses the date of the revision. Care should be taken to keep the file "weeded" and up-to-date.
2. A second card should be filed alphabetically by (a) state, (b) city within the state, and (c) name of the contact within the city classification. This location file is very helpful in preparing for trips away from the office. The specialist can take with him the card decks for locations to be visited and be sure of having a ready reference to all of his regular contacts at each location, together with addresses and telephone numbers.
3. The third card will be filed alphabetically by subject, giving the specialist a reference or mailing list of all contacts in a given subject classification.

An Expandable Classified Bibliography

The transportation specialist's stock in trade is a thoroughgoing personal knowledge of his field, bolstered by a knowledge of where to find the best available information on research results and other organized material pertinent to his work. His ability to make good use of the literature in the field will be greatly facilitated by an orderly procedure for building a classified bibliography of published material on transportation, physical distribution, and related subjects.

It is suggested that bibliographical information be recorded on a card form similar to the one illustrated, together with appropriate notes on the contents of the material and a notation as to its quality.

Subject _____

Author _____

Title _____

Place _____ Publisher _____

Date _____ No. Pages _____ Library Call No. _____

Magazine, etc _____

Vol. _____ No. _____ Pages _____ Date _____

Ex. _____ Good _____ Poor _____ Price _____

Notes:

Sample of Bibliography Card

The authors have found the standard 5 x 8 inch card size to be most adaptable for the purpose. These cards should be filed by subject, and alphabetically by author and title within the subject category.

A File System for Reference Materials

As a means of organizing reports, correspondence and other similar material for ready reference, most of us use the regular vertical file, with material classified by subject or according to some type of filing code. This is fine for much of our reference material, but we may run into problems with reports and pamphlets which might be classified in any one of several ways, depending upon the use to be made of them or the frame of reference of the classifier, which might vary over time.

One method of meeting this problem is a cross reference sheet like the accompanying example.

One of these sheets may be filed under each subject heading where you might have occasion to refer to the material in question. Thus, you will be able to locate all of the material in your file pertinent to the subject on which you are working, even though it may not be physically located under that subject heading.

"The increasingly complexity of traffic and transportation demands a new breadth and depth of knowledge not common in today's man. Here lies the educational challenge."

R. Eric Gracey
General Manager
Canadian Institute of Traffic & Transportation

FILE UNDER _____

CROSS REFERENCE

For further material on this subject see:

File Subject Heading _____

Name _____
(Name of Article or Individual)

Date _____

Brief Description of Material _____

Cross reference Form. Mimeograph on 8½ x 11 inch sheets.

Another system which has certain advantages over the cross reference setup, and which we are using with good results, came to us originally from the Institute for Community Development and Services at Michigan State University. This system may be described as follows:[3]

The morning mail brings you a report from the Economic Research Service, USDA. It is an analysis of grain transportation in the Northwest, filled with usable data—one of those things you "don't have time to read now, but will want to keep for reference."

Will this report go on top of your desk, among today's business matters? Or will it go on top of a file, or a stack of other reports you've given the same treatment for the past two months? Wherever it goes, can you find it quickly a few months later when you vaguely remember having some information on grain transportation and find you need it?

If this sort of reference material has been a problem to you, we suggest a system of filing that can make a multitude of small references readily accessible when they are needed. It is a library system adapted for a personal reference file, and can work well for anyone who must deal with a wide variety of subjects.

The system requires a file drawer, a card file, a notebook, and enough patience to give it a fair trial. It will almost eliminate file searching, making it possible to find any article quickly and easily. The system is simple, and once established, can be maintained with a minimum of effort. Anyone acquainted with the procedure can use the file without difficulty.

Here's how it works. When a new publication is received it is entered as follows:

Step 1—Assign the publication a number consecutive with that of the last entry. Let us assume that it is 126.

Step 2—Write the number 126 on a gummed label (which might be imprinted with your name and "please return") and affix the label to the document.

Step 3—Enter the number 126 and a correct bibliographic citation in a notebook which contains consecutive listings, by assigned number, of all materials in your file. The proper entry for books and pamphlets shows: author, title, place, publisher, date, and pagination. The proper entry for periodical articles shows: author, title, periodical, volume, date, and pagination.

Step 4—Select from the document's title or table of contents a few key words which suggest the information you will wish to refere to in the future. Enter these key words beneath your bibliographical citation.

Step 5—Prepare a 5 x 8 file card for each key word you have entered in the notebook. The key word is typed in the upper left corner of the card and below it the card is divided into 10 vertical columns numbered from one to zero. The columns represent the last digits of the numbers assigned to filed documents. Since this document is number 126 that number is entered in the sixth column of each card prepared for the document. File the cards alphabetically, by key words. (In the example shown, the key word card file already carried a card for Exempt Commodities *because several of the publications previously indexed had been referenced with this same phrase.)*

Exempt Commodities

1	2	3	4	5	6	7	8	9	0
41 111	42		4 104 124	55	36 126	47 97 107			

Sample Publication File Card

Step 6—The document, which has now been properly numbered, labeled, indexed, and recorded, is placed in a folder bearing the assigned number and is stored in numerical sequence in a file drawer.

[3]This presentation is adapted from a write-up by Abram P. Snyder of the Marquette, Michigan, Extension Center, which appeared in *Community Development Notes*, Michigan State University, September, 1960.

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The clerical work is now done and document 126 is available for future reference. You may forget all about it in the months to come, but suppose you need some information on the trends in the use of the various transport modes in the transportation of grain and other bulk exempt commodities. Document No. 126 will soon come to your attention if you proceed as follows:

Check your card file for such words as "grain," "exempt commodities," "trucking," "railroads," and "barges." Pull all appropriate cards and align them so that the numbered columns of all cards are continuous. Scan each column and jot down the numbers that recur on more than one card. Now check these numbers in order to screen the titles before removing the documents from the file. Since 126 appeared on at least two of the cards you pulled, you now see from your notebook that you have the report, *An Analysis of Grain Transportation in the Northwest*, and you know just where to find it.

The speed with which a reference can be located and can be returned to your file when not in use is one of the best features of this system. A number of modifications can be made in the procedures described, depending on your need. For example, books that do not fit in the file drawer can be placed on a shelf in numerical order. The notebook entry will probably clue you that a book is represented, but it might be useful to place a sheet of paper in proper position in the file drawer to refer you to the book shelf.

If your collection is a small one, you may not need to organize your cards in columns. This step is simply to aid in the scanning procedure. The system is not intended for correspondence, or for other materials which fit into clear and concise categories. However, it is invaluable for material which does not fit neatly into a single reference category.

Developing Descriptive Data On The Transportation Industry

To work effectively with the transportation and marketing firms within the state the specialist will need a good working knowledge of the characteristics of the firms involved in these activities. To this end, a transportation inventory should be developed which will take account of the following:

1. *Types and relative volumes of commodities transported into, within and from the state, to the extent that such information is available.*

Quotable Quote

"Broad, industry-wide action in conjunction with academic transportation leaders is necessary if we are to solve this problem of achieving adequate education and training programs for our industry."

William B. Johnson,
Chairman and Chief Executive Officer
Illinois Central Railroad

2. *Annual value of transportation services.*
3. *Geographic location and distribution of firms providing transportation services, by types of service offered, and by mode of transportation.*
4. *Number of persons employed in firms offering for-hire transportation services, and in the transportation functions in firms which have another primary business but operate transportation facilities of their own (so-called private fleets).*
5. *Annual payroll devoted to the transportation function, both by carriers and by private fleet operators.*

The Extension specialist should develop a file of information on the transportation services available in his state in terms of size of firm by number of employees, annual revenue, size of fleet, operating territory or other significant indicators. For railroads, Class I and II motor carriers, private fleets of five or more units, and other transportation agencies of significant size, fact sheets might be prepared summarizing operating characteristics of the firms involved.[4]

[4]See Forms A and B, pages 16 to 21, for examples of shipper and carrier fact sheets.

Quotable Quote

"The increasing importance of new concepts in transportation . . . implies a growing need for additional training for men already established in the profession."

Battelle Memorial Institute Study of Transportation Needs
***Reported in* Transportation Journal**
Spring, 1966, p. 5.

PART 3

Developing the Program

"With space age technology accelerating change in machines, methods and materials at an ever increasing tempo, we must make research and forward planning our basic tools for survival."

Alfred E. Perlman, President
Penn Central Railroad

Identifying Problems of the Industry and the Firm

An important part of the educational process involved in an Extension transportation program is the identification of the significant problems requiring priority effort, both in the Extension program itself and in the activities of the researchers who back up the program. The Extension specialist must be constantly alert to key problems and relationships and to changing characteristics and needs of the industry.[5] He must work at the job of shaping his program to meet these needs head-on and feeding back to the researchers an awareness and understanding of the problems requiring their help.

The transportation specialist should be well-informed on problems of public policy, regulation, and regional development. He should seek through educational means to encourage an objective understanding and evaluation of these problems by all segments of his clientele.[6]

The major orientation of an Extension transportation program will generally be toward the management problems and educational needs of individual shipper and carrier firms. The specialist will encourage adoption of new and improved transportation concepts and the application of sound economic and business management principles by his clientele. This orientation offers the greatest opportunity for achieving improved efficiency and lower cost of transportation services. Much can be accomplished by helping to upgrade the general level of performance toward that of the best operators in the industry. Here the demonstration firm method can be especially effective.

The problems to be dealt with range through the full spectrum of management responsibility. The transportation specialist will find it essential to engage actively in field contact, applied research and demonstration work with transportation firms to identify the particular problem areas in which he will be able to make the most useful contributions.[7]

Selecting Representative Firms for Study

Having determined the general pattern and characteristics of the transportation industry in his area, the transportation specialist will wish to make an analysis of a representative sample of the firms which make up his clientele. The resulting demonstration firm case studies should accomplish at least three objectives:

1. *They should provide the client firm with information useful in improving the efficiency of the operation.*

2. *The Extension specialist will gain additional experience in the analysis and solution of industry problems and will grow in understanding of the viewpoint of the active firm manager.*

3. *Properly developed demonstration case materials will serve as an effective educational tool in working with traffic and transportation management personnel in workshops, conferences and other teaching situations.*

[5]See Wesley R. Kriebel and David E. Moser, *Refrigerated Transportation by Motor Common Carriers—A Management Inquiry*. Extension Manual 70 (University of Missouri-Columbia, 1969) for a discussion of one such problem area.

[6]For an example of this type of Extension activity see T. E. Nichols, Jr., (editor), *Transportation and the Changing South*, Agricultural Policy Institute Series 25 (Raleigh: North Carolina State University, June, 1967.)

Quotable Quotes

"The problems we must solve in meeting our present and projected transportation needs are becoming increasingly complex... The planning tools used in transportation... are reaching their limits. We will need a new generation of analytical tools to meet present and projected conditions."

James M. Beggs, Under Secretary
U. S. Department of Transportation

"The transport system of this nation is not perfect, but it is the best system that exists anywhere in the world. Our network carries more goods of more kinds than any other system in the world and does it better than any other transportation system in the world."

Wallace R. Burke, Member
Interstate Commerce Commission

The sample firms for demonstration case studies should be selected to provide a suitable cross-section of clientele and to develop a sound demonstration group. Extension commodity marketing specialists may be especially helpful in identifying problems for study and in introducing the transportation specialist to appropriate demonstration firms.

Here are some suggested questions to help in selecting the firms:

1. *How diverse or concentrated is the service area or market territory of the firm?*
2. *What modes of transportation are involved? (rail, motor, air, water)*
3. *What size of firm should be selected?*
4. *Does the top management of the firm have a positive attitude toward innovation, methods analysis and improvement, and personnel development?*
5. *What is the leadership position of the firm management within the industry?*
6. *What types of transportation service are performed or required by the firm? For example—*
   - *(a) Common carrier —regular route*
   - *(b) Common carrier —irregular route*
   - *(c) Contract carrier*
   - *(d) Exempt carrier*
   - *(e) Private fleet*
   - *(f) Local cartage*
   - *(g) Delivery route operation*
   - *(h) Inter-city service*
   - *(i) Warehousing*
   - *(j) Dry freight*
   - *(k) Refrigerated and protective service*
   - *(l) Bulk hauling—liquids and flowable solids*
   - *(m) Livestock hauling*

[1]See Moser and Kriebel, *Transportation in Agriculture and Business*, pages 48-52, for a fuller discussion of problem areas in transportation.

Description of Demonstration Case Study Firms

A careful description of basic characteristics of the firm, its organization, operating features, and performance characteristics, will be an essential guide to an effective case study. Form A—Shipper Firm Fact Sheet and Form B—Carrier Fact Sheet list some of the important items to be included in the description of the firm, to the extent that such information is available. Much of the information required for Form B can be obtained from published sources as noted on page 1 of the form.

Quotable Quote

"Personnel employed by transportation will increase greatly, especially in highly skilled positions, thus substantially increasing the number of people who must be trained."

Battelle Memorial Institute Study of Transportation Needs
***Reported in* Transportation Journal**
Spring, 1966, p. 5.

FORM A

SHIPPER FIRM FACT SHEET

Current as of 1968
Year

Giant Markets, Inc.
Company Name

501 So. Washington Avenue	Scranton	Pennsylvania	18505
Headquarters Address	City	State	Zip Code

Headquarters Telephone Number 717-343-2401

Key Personnel:

Names	Titles	Addresses and Telepnone No.	Date Contacted
Jack Hodin	Executive		October, 1968
Joseph Hoden	Executive		
William Hodin	Executive		
Gene Colurso	Produce Supervisor		
Thomas Kaczmarek	Warehouse Foreman		

Primary Business:

Food chain, with 18 supermarkets and one modern warehouse. General trade area is within one hour's driving time from warehouse

Sales Volume (Last 5 years, if available):

Year	Total $ Volume
(Not available)	

Financial Data:

(Dun and Bradstreet rating, etc.)

Locations of Plants, Warehouses, or Stores:

City	Address	Telephone No.	Name of Contact Manager
Scranton	Maine Avenue	347-1307	F. Mercuri
Scranton	Wyoming Avenue	343-9989	P. Durkin
Scranton	Eynon Plaza	489-8181	F. Cimino
Scranton	Meadow Avenue	347-3064	J. Sparrow
Scranton	Birney Avenue	347-3080	J. Metrishyn
Scranton	Viewmont Mall	---	A. Sacco
Dunmore	Blakely Street	346-1928	J. Sparrow
Chinchilla	State Rd. # 1	586-9081	N. Mackar
Stroudsburg	P. O. Box 128	423-7070	I. Burch
Luzerne	Union Street	288-5461	A. Baloga
Dickson City	Main Street	489-9841	T. Grancey
Wilkes-Barre	S. Main Street	823-7501	Z. Popielarski
Liberty, N.Y.	Sullivan Avenue	292-6090	E. Sostak
Carbondale	N. Main Street	282-0128	J. Zaverl
Honesdale	Sixth Street	253-9910	M. Short
Mayfield	Poplar Street	876-9814	H. Loftus
Waymart	South Street	488-6230	F. Kacer
Forest City	Main Street	785-7205	G. Maile

Brief Description of Transportation Operations:

(Annual expenditure; modes of transport used; proportion of purchased transport service to total. Do they own trucks? Lease? Number of units? Number on payroll in Transport? Maximum length of haul for company fleet? What products in head-haul? In backhaul?)

Straight trucks	6
Trailers	12
Tractors	7
Bakery	2
Total	27

Fleet owned; used in grocery, produce, frozen food, dairy, and bakery distribution from warehouse to stores. All milk and meat is vendor delivered. No backhauling.

Brief Description of Transportation Operations: Cont.

The usual delivery pattern to stores is:

grocery - 2 orders per week to large stores and 1 per week to others.
produce - 4 orders per week to large stores and 3 per week to others.
dairy - 2 orders per week to all stores
frozen - 1 order per week

Special Physical Distribution Problems:

Close coordination is lacking between the warehouse and stores on merchandise ordering, scheduling of deliveries and timing of receipts at store level. Warehouse capacity (grocery) appears too small for most efficient handling and storing methods.

Reasons for Interest in this Company:

Management is interested in improving their merchandise handling, fleet management and delivery scheduling. This firm is a growing organization, and management is receptive to new ideas, methods and procedures.

Remarks:

Extension will test the lockset method of truck routing and scheduling. The aim is to reduce delivery time and the costs of distribution.

FORM B

CARRIER FACT SHEET*

Current as of 1968
Year

Ozark Transportation Company
Company Name

1146 Range Line Road	Summit	Missouri	63660
Headquarters Address	City	State	Zip Code

Headquarters Telephone Number 711-2000

Key Personnel:

Names	Titles
I. M. Ross	President
T. E. Case	Vice President--Operations
F. O. Hughes	Vice President--Sales
B. E. Soule	Comptroller

Type of Operation:

Irregular Route Refrigerated Commodities (solids)
Motor Common Carrier

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*Suggested sources of data:

Official Motor Carrier Directory
1130 So. Canal Street
Chicago, Illinois 60607
(Non-Financial Data)

Trinc's Blue Book of the
Trucking Industry
Trinc Associates, Ltd.
Washington, D. C. 20005

Financial and Operating Statistics
Class I & Class II Motor Carriers
American Trucking Associations
1616 P. Street N. W.
Washington, D. C. 20036

For information on railroads and water carriers refer to quarterly and annual reports, Transport Statistics in the United States, issued by the Interstate Commerce Commission, Bureau of Accounts.

Direct Service - (States Authorized):

Interstate--Arizona, Claifornia, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Mexico, N. Dakota, Oklahoma, Oregon, S. Dakota, Texas, Utah, Washington, Wisconsin.

Intra-State--Missouri, Illinois.

Equipment--(types and numbers of units):

156 tractors, 168 reefer trailers (mechanical units)

Terminals:

City	Address	Telephone Number
Chicago, Illinois	1 Garcia Street	314-1166
Omaha, Nebraska	2 Baker Avenue	216-4111
Summit, Missouri	1146 Range Line Road	711-2000
San Francisco, California	300 Charles Blvd.	816-6677
St. Paul, Minnesota	4 Denver Street	411-2000
Walla Walla, Washington	60 Dearborn Avenue	212-5665

Types of Service Offered:

Refrigerated service; C.O.D. shipments accepted; Shipments handled on "Order Notify B/L" Protective Service: Meats, meat products and by-products; articles distributed by meat packing houses; fish sticks; fresh and frozen fish; butter; butter substitutes and salad dressings; fresh and frozen fruits and vegetables; automatic teletype service between all terminals.

Principal Type of Commodity Carried:

Refrigerated solid products.

Remarks:

Companies under common control with carrier; ABC Co., Inc.

OPERATING RESULTS

Company Ozark Transportation Company

Year	Operating Revenues ($000)	Ratio Total Operating Revenues										
		Operation and Maintenance Expense - Other Expenses									Insurance Expense *	
		Operating Ratio (%)	Equip Maint. (%)	Transportation (%)	Terminal (%)	Ins. & Safety (%)	Adm. & Genl. (%)	Deprec. & Amort. (%)	Oper. Taxes & Lic. (%)	Labor-All Personnel* (%)	PL & PD %	Cargo L & D%
1967	5,953	97.3	.1	80.9	1.8	3.9	8.2	.4	.2	5.2	1.3	1.2
1968	8,284	98.1	.5	81.9	3.9	3.5	5.3	.2	.2	4.8	.9	1.1

*Included in 0 & M Expense

Year	Current Assets to Current Liabilities (Ratio)	Terminal Cost Per Intercity Ton ($)	Averages				
			Freight Revenue Per Intercity			Intercity	
			Ton ($)	Vehicle Mile (¢)	Ton-Mile (¢)	Load (Tons)	Haul (Miles)
1967	1.7	.90	49.83	39.9	2.3	17.4	2170
1968	1.6	1.99	50.54	40.8	2.4	17.3	2144

Measures of Operating Efficiency

One of the most important opportunities open to the Extension specialist is to help carriers and private fleet operators develop and use cost and performance records.

As a service enterprise, the transportation company or the private fleet operation of a shipper firm usually has limited direct control over the physical volume of goods tendered to it for shipment on a given day, yet it must stand ready to provide the service required, both in terms of equipment and facilities, and of personnel. A high premium is placed upon management of labor and equipment resources for optimum utilization. Useful measures of equipment and labor productivity include *tons handled per dock man-hour, ratio of in-service tractors and trailers to total fleet,* and *empty miles traveled as a ratio to total ton miles.*

In motor freight operations, labor costs are high in relation to total costs. Total personnel costs expressed as a ratio of total operating revenue should, therefore, be closely watched as an indicator signaling a need for remedial action. Other indicators which serve to flag problem conditions requiring analysis and possible remedial action are equipment maintenance, terminal, transportation, and loss and damage claims expense. These are usually expressed as a ratio of operating revenue. Where possible it is desirable to obtain comparative figures for several years to determine the trends within the firm, as well as to make comparisons with established performance standards, or with other firms having similar operating characteristics.

Useful cost figures for comparison purposes may be obtained from the following sources:

Financial and Operating Statistics, Class I and II Motor Carriers of Property. American Trucking Associations, 1616 P. Street, N.W., Washington, D. C. 20036. Quarterly and Annual Reports, by Regions and Total U. S. Revenues and itemized operating costs as reported by individual carriers to the Interstate Commerce Commission.

Trinc's Blue Book of the Trucking Industry, Trinc Associates, Ltd., 240 Woodward Bldg., Washington, D. C. 20005. Annual. Selected information from annual ICC reports of Class I and II motor carriers of property, grouped by regions and by carrier classifications.

Thomas H. Camp, *Motortruck Operating Costs of Farmer Cooperatives,* General Report 121, Washington, D. C., Farmer Cooperative Service, U. S. Department of Agriculture, 1964.

Thomas H. Camp, *Costs and Practices of Selected Cooperatives in Operating Bulk-Feed Trucks.* General Report 132. Washington, D. C. Farmer Cooperative Service, USDA, 1965.

Bureau of Railway Economics, Association of American Railroads, Washington, D. C. 20006.

Office of Carrier Acounts and Statistics, Civil Aeronautics Board, Washington, D. C.

Transportation Division, Bureau of the Census, U. S. Department of Commerce, Washington, D. C.

Transport Statistics in the United States (for the year ended December 31, 196). Bureau of Accounts, Interstate Commerce Commission, Washington, D. C.

Part 1—Railroad, Their Lessors and Proprietary Companies.
Part 5—Carriers by Water
Part 6—Oil Pipe Lines
Part 7—Motor Carriers
Part 8—Freight Forwarders
Part 9—Private Car Lines

The Extension specialist may be able to obtain back issues of these and other published financial summaries from cooperating carriers or state trade associations.

Analyzing Costs and Operating Characteristics

The basic objective of a fleet operation should be *to provide acceptable transport service at the lowest cost compatable with the service requirements of the business.* It follows that to achieve this objective there must be regularly available records adequate to the measurement of accomplishment.[8]

In making a case study of a demonstration firm the specialist's first concern should be to review and evaluate the available records bearing upon the performance characteristics of the transportation function.

Past experience has shown that the most fruitful focal points of investigation and improvement in efficiency will ordinarily include the following:

a. Systematic performance and cost analysis based upon an adequate record system.

[8]Thomas H. Camp and Wesley R. Kriebel, *Controlling Motor Truck Operating Costs of Farmer Cooperatives,* FCS Information 58, Farmer Cooperative Service, U. S. Department of Agriculture (Washington: Government Printing Office, October, 1968) offers helpful suggestions for development of an orderly cost records system for analysis and control of a truck fleet operation.

b. Exacting equipment specification and selection in terms of jobs to be performed.

c. Planned equipment replacement.

d. Well established maintenance policies.

e. Alert management control based upon specific standards of performance.

f. Dispatching of equipment for optimum utilization.

g. Well-organized safety and loss and damage claims prevention programs.

h. Established personnel administration and development programs.

i. Top management recognition of importance of physical distribution in the business.

j. Coordination between sales and purchasing functions and transportation operations.

k. Terminal operations control and improvement program.

In a processing or marketing firm the record system should also provide the means for a determination of the following cost worksheet figures:

Total net sales
Total physical distribution costs
Common carrier expense—total
- Rail shipping expense
- Truck shipping expense
- Water transportation
- Air transportation

Private trucking expense—total
- Truck drivers pay
- Equipment leasing charges
- Depreciation of equipment
- Truck maintenance and supplies (including license fees, insurance, and taxes)
- Public warehousing expense (including accessorial charges)

Private warehousing costs—total
- At distribution and sales centers
- Depreciation
- Total overhead, including payroll and maintenance

Materials handling expense—total
- Freight handlers labor expense
- Material handling equipment depreciation
- Material handling equipment maintenance and supplies

Shipping room costs—total
- Payroll
- Supplies (including cartons, strapping, etc.)
- Overhead

Over-short and damaged goods (warehousing and transportation)

Selected administrative expenses related to distribution costs—total
- Management: Vice President of Traffic
  Department Heads
- Clerical
- Other

These items should be expressed as a ratio of total net sales. The ratios should be compared with typical cost ratios for the industry, where available. Where ratios appear out of line, further checking is indicated to determine the reasons.

Presenting Recommendations to Management

Presentation of the demonstration firm report should always be made to the decision-makers in the firm who will be in a position to act upon the recommendations. Maximum educational impact of the problem-solving technique will be achieved by developing alternative methods of solution in sufficient detail so that all the essential elements are available for an intelligent choice. Each alternative should be related to realistic cost estimates and fully documented.

Educational Use of Case Study Materials

The manner in which the case material is organized and presented will have an important bearing upon its effectiveness as an educational tool. A properly developed case study may serve to further define specific problems as seen by management and to give direction toward their solution. The manager may be motivated toward a more imaginative inquiring approach to his problems and a desire for continuing study and improvement.

The Extension educator will use other appropriate tools to extend the knowledge obtained from case study experiences to the industry. These may include conferences, short courses, workshops, publications and mass media communications.

Quotable Quote

"The information available indicates that training in transportation already is inadequate. (1) Not enough schools offer transportation curricula. (2) present curricula are not adequate to fulfill today's requirements, and . . .(3) the number of students enrolled in the field is not large enough to meet industry's personnel needs."

Battelle Memorial Institute Study
of Transportation Needs
Reported in **Transportation Journal**
Spring, 1966, p. 5

Appendix
Ratemaking Procedures

PART I—RATEMAKING BY CARRIERS
(Preceding ICC Procedures)

1. Proposal filed by carrier or shipper with carrier ratemaking bureau.
2. Bureau dockets, numbers, and makes proposal available to interested parties. (*Traffic World* publishes most proposals.)
3. Interested parties notify bureau of views.
   a. To support; or
   b. To oppose and, in some cases, ask for public hearing.
4. If public hearing requested—
   bureau sets date and place of hearing;
   interested parties appear and make presentations.
5. Bureau decides on proposal—
   a. If disapproved, matter closed unless—
      one or more (but less than majority of carriers involved) approve on own behalf and publish tariff to be effective in not less than 30 days.
   b. If approved—
      bureau or individual carrier publishes tariff to be effective in not less than 30 days.
6. If no protest filed with ICC 12 or more days prior to effective date, the tariff goes into effect.

PART II—RATEMAKING THROUGH ICC PROCEDURES

7. *Origin of ICC Action*
   a. Carrier publishing *new* rate or service.
   b. Complaint filed by carrier or shipper against *existing* rate or service.
   c. ICC, on own behalf, investigates rate or service.

8. *Action Following Publication of New Rate or Service (7-a above)*
   a. Rate or service effective in 30 or more days *unless* opponents file protest 12 or more days preceding effective date.
   b. If protest filed, proponents of rate or service must reply to protest at least 3 days preceding effective date.
   c. ICC Board of Suspension considers rate or service and decides to:
      (1) Let rate or service become effective;
      (2) Suspend it and investigate; or
      (3) Investigate without suspension of rate or service.
   d. Appeals to Board of Suspension action must be made to Rate Division (Division 2) of ICC not later than 2 days preceding effective date.
   e. ICC Rate Division approves, modifies, or reverses decision of ICC Board of Suspension.

9. *Further Action*
   If ICC Board of Suspension decides to suspend and investigate a rate or service (8-c-2) or to investigate without suspsension (8-c-3), the activities in 10 through 14 occur.

Division 2 Actions

10. *Hearings*
    a. ICC sets hearing dates and places.
    b. Interested parties prepare testimony for hearing (extensive exhibits required).
    c. Hearings are held - testimony presented and witnesses subject to cross-examination.
    d. Briefs are filed.

11. *Recommended Decision and Order*
    a. ICC Hearing Examiner issues recommended decision and order.
    b. If no exceptions filed, Examiner's action becomes ICC order.
    c. If an interested party disagrees with recommended decision and order, he files exception.
    d. If an interested party disagrees with the exception, he replies to the exception.

12. *Oral Arguments*
    If oral argument opportunity requested by interested parties and ICC approves, oral arguments are presented.

13. *Division 2 Decision*
    ICC Rate Division (Div. 2) decides on case.

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14. *Petitions for Reconsideration*
    a. Parties of record may petition for reconsideration of Division 2 decision.
    b. If petition approved, reconsideration may occur:
        (1) On basis of record without rehearing; or
        (2) Rehearing is scheduled and process in 10 through 13 above is repeated.
    c. ICC Division 2 decides on case.

Full Commission Matters

15. a. Interested parties who wish to obtain further review of rate and service matters must file a *Petition for Declaration of National Transportation Importance.*
    If ICC decides to consider petitions, it hears oral arguments.
    c. If ICC approves action sought, its order overrides all preceding decisions.
    d. If ICC disapproves consideration of petition or, after oral arguments heard, denies action sought, only recourse of interested parties is to the courts.

Complaint Actions

At any time an interested party may file a complaint with ICC against a rate or service or ICC can investigate.

If either of the above occurs, activities in 10 through 14 could take place.

Adapted from a paper, *Ratemaking Procedures and Rate Structures,* presented by James H. Lauth, Chief of the Transportation Services Branch, Consumer and Marketing Service, USDA, at the National Extension Transportation Workshop, University of Missouri-Columbia, May 21, 1965.

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